

CLAIMS

WHAT IS CLAIMED IS:

1. A system for filtering in a wellbore environment,
5 comprising:

a sand screen having a tubular component at least a
portion of which is formed of bistable cells.
- 10 2. The system as recited in claim 1, further comprising a
filter disposed on the tubular component.
3. The system as recited in claim 2, wherein the filter
has an expansion ratio at least as great as that of the tubular.
- 15 4. The system as recited in claim 2, wherein the filter
is folded.
5. The system as recited in claim 2, wherein the filter
20 is formed of a plurality of circumferentially overlapping sheets
of filter media.

6. The system as recited in claim 2, wherein the filter is formed of at least one circumferentially overlapping sheet of filter media.

5 7. The system as recited in claim 2, further comprising a second tubular component that may be radially expanded, the filter being disposed between the tubular component and the second tubular component.

10 8. A system for filtering in a wellbore environment, comprising:

at least one filter media defining a plurality of perforations, the perforations being selected to provide a predetermined flow regime therethrough.

15 9. The system as recited in claim 8, further comprising an expandable tubular component coupled to the at least one filter media.

20 10. The system as recited in claim 9, wherein the expandable tubular component comprises a plurality of bistable cells.

11. The system as recited in claim 10, further comprising
a second tubular component that may be radially expanded, the
filter being disposed between the tubular component and the
5 second tubular component.

12. The system as recited in claim 11, wherein the second
expandable tubular component comprises a plurality of bistable
cells.

10 13. A system for filtering particulate matter in a
wellbore environment, comprising:

an expandable screen component having a plurality of
15 bistable cells; and

a filter disposed along the expandable screen
component.

20 14. The system as recited in claim 13, wherein the filter
comprises a filter sheet wrapped around the expandable screen
component.

15. The system as recited in claim 14, wherein the expandable screen component is generally tubular in shape.

16. The system as recited in claim 13, wherein the filter
5 comprises a plurality of overlapping filter sheets.

17. The system as recited in claim 16, wherein each of the plurality of filter sheets is affixed to the expandable component.

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18. The system as recited in claim 13, further comprising a second expandable component, wherein the filter is disposed between the expandable screen component and the second expandable component.

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19. The system as recited in claim 13, wherein the expandable screen component comprises a plurality of bistable cells.

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20. The system as recited in claim 18, wherein the expandable screen component and the second expandable component each comprise a plurality of bistable cells.

21. A method of restricting the flow of particulate matter into a tubing used to carry fluid therethrough, comprising:

forming a particulate screen with a plurality of
bistable cells;

positioning the particulate screen upstream from the
tubing; and

expanding the particulate screen.

22. The method as recited in claim 21, wherein forming comprises shaping the particular screen into a tubular configuration.

23. The method as recited in claim 22, wherein expanding comprises expanding the tubular particle screen in a radially outward direction.

24. The method as recited in claim 21, wherein forming comprises constructing the particulate screen with a generally tubular member having the bistable cells and a filter material coupled to the tubular member.

25. The method as recited in claim 24, further comprising arranging the filter material about the exterior of the tubular member in a single sheet.

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26. The method as recited in claim 24, further comprising arranging the filter material in a plurality of overlapping sheets.

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27. The method as recited in claim 26, further comprising maintaining the overlapping sheets in an expanded configuration via a locking feature.

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28. The method as recited in claim 21, further comprising routing a control line along the particulate screen.

29. A system for improving the collapse resistance of an expandable device, comprising:

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an expandable tubular system for use in a wellbore environment, the expandable tubular system having a first layer overlapping a second layer; and

a locking mechanism, wherein upon expansion of the expandable tubular system, the locking mechanism facilitates maintaining the expandable tubular system in the expanded condition.

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30. The system as recited in claim 29, wherein the expandable tubular system comprises a tubular member having a plurality of bistable cells.

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31. The system as recited in claim 30, wherein the first layer and the second layer are formed of a filter material wrapped about the tubular member.

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32. The system as recited in claim 31, wherein the locking mechanism is coupled to the first layer and to the second layer.

33. The system as recited in claim 32, wherein the locking mechanism comprises ratchet teeth.

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34. The system as recited in claim 32, wherein the locking mechanism comprises detents.

35. The system as recited in claim 32, wherein the locking mechanism comprises angled bristles.

36. The system as recited in claim 32, wherein the locking
5 mechanism comprises a plurality of vanes.

37. A system for filtering in a wellbore environment,
comprising:

10 a generally tubular base component expandable to a
increased diameter, the generally tubular base
component having at least one bistable cell;
an expandable shroud disposed at least partially
15 around the generally tubular base component; and
a filter material disposed intermediate the generally
tubular base component and the expandable shroud.

20 38. The system as recited in claim 37, wherein the
generally tubular base component comprises a plurality of
bistable cells.

39. The system as recited in claim 38, wherein the expandable shroud comprises a plurality of bistable cells.

40. The system as recited in claim 39, wherein the filter
5 material comprises a base filter and a plurality of overlapping filter sheets surrounding the base filter.

41. The system as recited in claim 40, wherein the expandable shroud is affixed to the generally tubular base
10 component.

42. A system for restricting the flow of particulate matter into a tubing used to carry fluid therethrough, comprising:

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means for forming a particulate screen with a plurality of bistable cells;

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means for positioning the particulate screen upstream from the tubing; and

means for expanding the particulate screen.